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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/034,827 | 01/03/2002 | Gary P. Morrison | TI-31373 | 4496 |

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EXAMINER

MITCHELL, JAMES M

ART UNIT PAPER NUMBER

2827

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/034,827

Applicant(s)

MORRISON ET AL.

Examiner

James M. Mitchell

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,4-10,12,15,17,18 and 23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,4-10,12,15,17,18 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 2, 6, 7, 9, 10, 15, 17, 18 and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Inaba (JP 2001-217388).

Inaba discloses a semiconductor assembly and method of assembling comprising steps of inherently forming strip-like flexible interconnector (2) of electrically insulating polyimide material (Para. 0016) having first (top) and second (bottom) surfaces, said interconnector having on said first surface and second surfaces by inherently forming electrically copper conductive lines integral on said strip like flexible interconnector (Para.0015) for connecting a plurality of packaged semiconductor devices (item 3 surrounded by item R), forming on the first surface with an inherent first array of ports (2f ; Fig 9), said interconnect further having inherent electrical paths extending through said interconnect (via first chip closest to substrate electrically connected to substrate through contacts 7) forming electrical ports (7) on said second surface, and inherently attaching a plurality of second coupling members to said array of

inherent ports (via 7; Fig 2), wherein the arrays are grouped in separate areas and a first plurality of ports are spaced apart less, center to center, than a second plurality of ports (via spacing of item 2, compared to item 7) are spaced apart, center to center, folding said interconnector so that adjacent separately encapsulated semiconductor devices (Fig 4) are stacked on top of each other, and at least one un-capsulated semiconductor device (chip portion with no item R) having a plurality of first electrical coupling members attached to said first plurality of ports, and a plurality of second of second electrical coupling members attached to said second plurality of ports, said coupling members suitable for attachment to other parts, said ports face in one direction while said port face in the opposite direction, at least one semiconductor device (3) having a plurality of gold coupling members (8; Para. 0024) said first coupling members attached to said entry ports (shown in Fig 9); said device is an inherent integrated circuit chip (Para. 0018) having an active and passive surface; said device encapsulated (9) with a non-conducting polymer underfilling any spaces between said coupling members attached to said ports under said device in a package with outside contact pads with said first coupling members inherently attached to said contact pads.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4, 12, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inaba as applied to claims 15 and 23 and further in combination with Denes (U.S. 5,220,488).

Inaba does not appear to disclose passive electrical component integrated into the conductive line, however Denes utilizes disclose passive electrical components integrated into the conductive line (Fig 1, 4, 5).

It would have been obvious to one of ordinary skill in the art to integrate passive components into said conductive lines on the interconnector of Inaba, in order to provide high reliability as taught by Denes (Abstract).

Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inaba as applied to claim 15 or 23 and in further combination with Akram (US 6,214,714).

With respect to claim 5, Inaba discloses an inherent port space, but does not appear to disclose that the ports are spaces less than 100 micrometers. In any case,

various spacing of ports/pads are known in the art and used for various packaging sizes. It would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose these particular dimensions because applicant has not disclosed that the dimensions are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the process would possess utility using another dimension. Indeed, it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

With respect to claims 8, Inaba further discloses inherent solder balls (via conductive bump members in the shape of a ball), but does not appear to disclose that the solder balls are formed from tin, tin/alloys, tin/ silver, tin/lead etc.

However, since applicant did not traverse that tin lead alloy is well known in the art, it is accepted and any further argument to that affect is waived. In addition, Akram is provided solely to further evidence examiner's official notice in the prior office action that tin lead alloy is well known for providing a conductive connection and that it would have been obvious to one of ordinary skill in the art form a solder ball from lead/tin at the time the present invention was made, in order to provide a ball that was conductive. Further

the solder ball materials would have been obvious, since it has been held that to be within the general skill of a worker in the art to select known material on the basis of its suitability for intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416 (1960).

Response to Arguments

Applicant's arguments filed March 23, 2004 have been fully considered but they are not persuasive. Applicant traverses the rejection based on its belief that Inaba is not available as a prior art reference. 35 U.S.C 119 (e), states in part:

An application for patent filed under section 111(a) or section 363 of this title for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in a provisional application filed under section 111(b) of this title, by an inventor or inventors named in the provisional application, shall have the same effect, as to such invention, as though filed on the date of the provisional application filed under section 111(b) of this title, **if the application for patent filed under section 111(a) or section 363 of this title is filed not later than 12 months** after the date on which the provisional application was filed and if it contains or is amended to contain a specific reference to the provisional application.

Because, the petition office has found that applicant's invention was filed January 3, 2002, which is later than 12 months from applicant's provisional application, it is not

afforded the earlier filing date. As such, Applicant's arguments are found unpersuasive and Inaba is deemed valid as a prior art reference.

In regard to the 112 rejection, applicant cited page 16 to support un-encapsulated. Page 16 does not exist as part of the specification filed April 26, 2002, but support is found on page 8; the 112 rejection is withdrawn.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

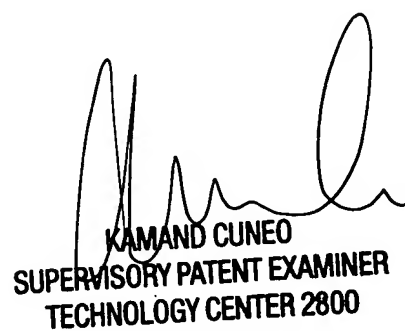
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 10:30-8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (571) 272-1957. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


Jmm
June 8, 2004


KAMAND CUNEO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800